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State of Maryland

Governor's Advisory Council on Recycling

Harvey Alter, Ph.D.
Chairman

February 12, 1991

Hon. William Donald Schaefer
Governor, State of Maryland
State House
Annapolis, Maryland 21401

Dear Governor Schaefer:

I am pleased to submit the first annual report of the Maryland Governor's Advisory Council on Recycling, as required by your Executive Order establishing the Council. It is submitted on behalf of all of the members and others who have contributed to the work of the Council during 1990.

Please note that in its first year of existence, the Council addressed many aspects of municipal solid waste recycling and reduction. Some of these efforts resulted in various interim reports (which are summarized in the Annual Report); others have led to several draft interim reports that we expect will be made final during the beginning of 1991.

The Council respectfully draws your attention to several recommendations in the report and looks forward to your response. We stand ready to provide additional information to you as you may wish.

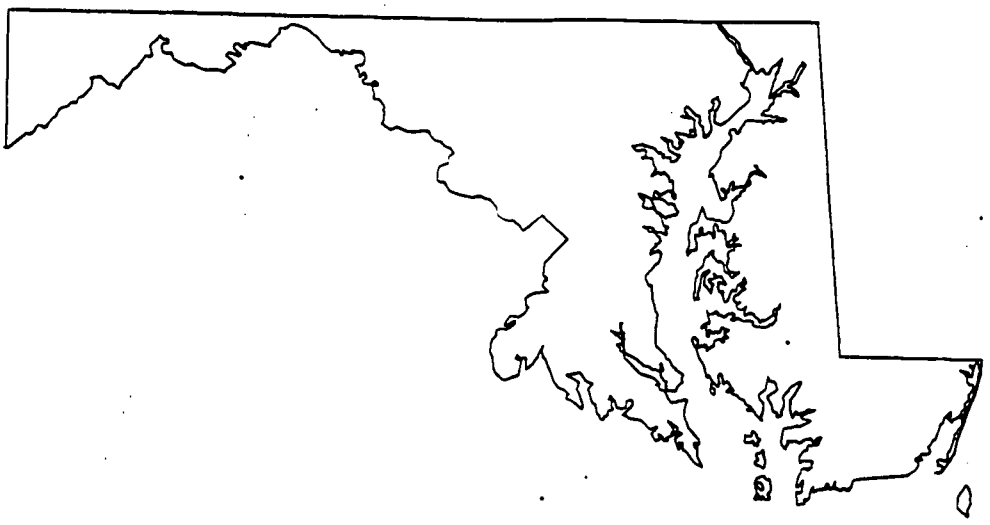
At the end of the first year, the Council is optimistic as it addresses additional points in your assignment and related topics.

Sincerely,

Harvey Alter, Chairman

cc: Hon. Robert Perciasepe
Mr. Mark L. Wasserman
Mr. Gerald L. Thorpe
Members of the Council

State of Maryland



Governor's Advisory Council on Recycling

Annual Report
1990

State of Maryland
Governor's Advisory Council on Recycling

Annual Report to the Governor
1990

Introduction

The Governor's Advisory Council on Recycling was established by Executive Order 0.01.01.1989.08 by Governor William Donald Schaefer. Members were asked to serve on November 1, 1989. A roster of the members for 1990, the organizations or positions they were chosen to represent, and the length of their terms, is included as Appendix I.

This is the first annual report of the Council. As such, it is a form of interim report of the Council in addressing the tasks assigned by the Executive Order and some other, related tasks that the Council has undertaken.

The Executive Order established the scope of the Council to advise and assist the Governor and the Department of the Environment in:

(1) Coordinating the efforts of the State to facilitate the implementation of the recycling goals at the State and county level;

(1) Identifying local, national and international markets for recycling materials;

(3) Determining the need to expand or construct recycling centers;

(4) Developing rules and regulations for recycling the solid waste stream;

(5) Determining the programs necessary to educate the public on the need to participate in recycling efforts;

(6) Determining the programs necessary to reduce the amount of solid waste generated for disposal;

(7) Evaluating State procurement policies for the purchase of recycled materials;

(8) Researching the economics and financing of existing and proposed systems of solid waste recycling; and

(9) Determining the costs, benefits, and effects of replacing certain packaging materials used in commerce with other recyclable materials and the role of these materials in recycling efforts.

Per the Executive Order, the Council is instructed to report to the Governor annually and interim reports are to be provided as necessary. This is the first annual report. Interim reports (referred to later) were submitted by letter to the Governor.

The Governor's letter of appointment to the Chairman included:

"In carrying out this charge, the council should meet quarterly the first year. Committees should be formed to address specific issues. Recommendations made by the Council should be accompanied by specific evaluation as to the impact on economics, environment, and other methods of waste disposal, as well as obstacles to implementation."

Further, a preliminary work plan was requested.

Organization and Meetings of the Council

At its first meeting on January 3, 1990, the Council decided to meet monthly, rather than quarterly, in order to carry out their mandates. Further, instead of specific committees, the Council agreed that Task Groups would be formed as necessary to address each of the nine points in the scope as well as related matters as the Council may identify. In this way, members could be involved at the earliest point in addressing more than one point of the scope and could be assigned to other points as portions of the scope were completed.

During 1990, the Council met every month, generally from 9:00 a.m. to noon on the first Monday of the month. Attendance was high, as listed in Appendix II.

The Council Work Plan

In accord with the Governor's request, and in order to plan the Council's activities, considerable effort was expended in the first few meetings to develop and approve a work plan. (During this time, the Council concurrently proceeded with discussion of other items within its charge.) Many of the items in the work plan had to be scheduled to fit in with the State's requirement that the counties submit recycling plans prior to July 1, 1990 and that the Department of Environment had already commissioned a contractor's study to identify local, regional and international markets for recycled materials.

The Council's work plan set out a schedule to address the nine points in the Governor's assigned scope and other matters viewed as pertinent. A copy of the 1990 work plan is included as Appendix III. The work plan also includes a set of questions the Council posed for itself to guide its work.[1]

[1] The Council began discussion of the 1991 revisions to the work plan at its September 1990 meeting. A revised plan is expected to be approved before March 15, 1991.

Interim Reports

An interim letter report was submitted to the Governor on June 22, 1990. The points of the Executive Order addressed and the subjects covered were as follows:

- *Coordinating the efforts of the State to facilitate the implementation of the recycling goals at the State and county levels:* Some ways of coordinating these efforts were addressed by preparing texts of three papers on audits for waste reduction and recycling, a guide to buying recycled products, and a guide to office recycling.

- *Identifying local, national and international markets for recycling materials:* The results of the Council's review of the Maryland Department of the Environment contractor's study on markets for recycled materials was submitted.

- *Determining programs necessary to reduce the amount of solid waste generated for disposal:* A recommendation that an Executive Order be issued regarding use of double-sided copying and lighter basis weight papers in State offices was submitted.

All of the above were interim reports. It is planned that these subjects will be revisited and, it is anticipated, additional recommendations in each category will be made. During the first year, groundwork was laid for several other of the items in the assignment to the Council. Specifically:

An interim report on determining costs, benefits, and effects of replacing certain packaging materials used in commerce through bans, taxes and deposits (beverage containers only) was prepared and scheduled for issuance in February 1991. Another interim report on the financing of existing and proposed systems of solid waste recycling was prepared, scheduled for issuance in early 1991.

In the early part of 1991, an interim report on possible recycling education programs for the State (K-12 and university) will likely be completed.

The subjects of these interim reports are discussed in detail later.

Outside Resources Consulted

During the course of the year, the Council saw fit to invite outside experts for advise and counsel. These were: Mr. Scott Horne, Prince Georges Scrap Co. on the subject of scrap processing, selling and brokering; and Mr. Matthew Coz of Northeast CRINC. This company designs and builds materials recovery facilities (MRFs) and was selected to build the MRF in Montgomery County.

During the course of the year, several outside interested parties attended and contributed to many of the Council's meetings. Many others were consulted by the various Task Groups that were formed.

Summary of Subjects Discussed by the Council and Tentative Conclusions

Some of the key subjects discussed by the Council, which may be considered as work in progress, are listed below.

- A review of county recycling activities, including review of some of the plans submitted to the Maryland Department of the Environment. Several of the Council members presented detailed reviews of some of the County plans. It was realized that these plans are works in progress, under review by the Department of the Environment, and subject to change. Overall, the Council was impressed by many of the plans and the progress that the Counties have made.

- Methods of office waste reduction, including double-sided copying, the use of lighter basis weight papers and implementation of waste audits. The Council prepared, approved and forwarded to the Governor texts of what could be pamphlets on these subjects. The texts are appended to this report as Appendix IV.

- Encouraging the purchase of recycled materials. Methods for encouraging this throughout the State are under consideration.

- Review of the State's contractor's report (including a presentation by the contractor) on a study of markets for recycled materials. Task Groups were formed to review the report for specific items, such as: assumptions leading to the economic and market conclusions, the discussion of the role of ports, and the role of Counties and Municipalities. The discussion assisted the Maryland Department of the Environment in their further discussions with the contractor.

- Discussion of establishing a markets and marketing database for the State, cities and counties, and private sector interests. This included the concept of the State centralizing the marketing of materials collected for recycling and has evolved further into an ongoing discussion aimed at recommendations of possible new State services for municipalities and counties in the field. Task Groups were formed here to address possible specific services for the private and public sectors. The private sector representatives did not think that a particular State service in this field was necessary. Representatives from the Maryland Municipal League and the Maryland Association of Counties are scheduled to present their recommendations in early 1991.

- Long discussion of the possibilities of imposing bans, taxes or deposits to change current use and recycling of packaging. The discussion included

opportunities for replacement of certain packaging forms. An interim report is forthcoming which makes several recommendations concerning bans and taxes. It was not possible to reach consensus on beverage container deposits; the same schisms that exist broadly in the State among residents was reflected in the Council.

• Long discussion of means of financing recycling activities, and new solid waste related financing mechanisms in the State. An interim report is forthcoming that addresses some possible new initiatives and ways of funding them. However, despite a great deal of discussion, it was not easy to identify new, needed programs that require funding. The Counties in Maryland have responded well to the mandates of the recycling law and have put in place staff and infrastructure to comply.

• Possible recommendations on recycling education programs for grades K through 12 and establishing new university programs in the field. Preparation of an interim report will be accomplished early 1991 addressing specific possible State initiatives for improving environmental education on recycling for grades K-12 and steps that can be taken for needed post-graduate education.

The November 1990 meeting was devoted to a tour of the BRESCO waste-to-energy facility and Phoenix Recycling as a means of broadening the education and perspectives of the Council members.

Specific Recommendations

This section repeats the recommendations made to Governor Schaefer in interim letter reports.

1. Means to Coordinate State Efforts to Facilitate Implementation of Recycling Goals at the State and County Levels. This is a continuing function that must permeate virtually all activities of the Council. As a specific effort, the Council recommends to the Governor the texts of three papers: *Guide to Waste Audits for Waste Reduction and Recycling, Guide to Buying Recycled Products,* and *Guide to Office Recycling*. These were prepared by the Council with the assistance of the Northeast Maryland Waste Disposal Authority. Copies of the texts are included as Appendix IV.

It is our recommendation that the Office of the Governor bring these to the attention of the General Assembly, Counties, Municipalities, all State offices and the private sector. An appropriate State agency should publish and distribute these Guides broadly, or otherwise emphasize to State agencies that they adopt the methodologies in the Guides in the administration of their office functions. The private sector will benefit from the Guides. The Maryland Chamber of Commerce has offered to distribute and publicize the Guides as a means of increasing recycling in the State.

2. Identification and Evaluation of Markets for recycled Materials. Fortunately, prior to the convening of the Council, the Maryland Department of the Environment proceeded to

commission a consultant's study on this complex subject. Therefore, as a first step, the Council reviewed the report, "Maryland Recyclable Materials Study" submitted in January 1990 to Secretary Walsh. The Council found the report a useful first start. It illustrates that markets are dynamic and that a single study cannot fully define markets. Work must continue and the report must be updated from time to time.

Now that an overall view of potential markets has been established, and it has been illustrated that the markets for many potentially recoverable materials are supply -- not demand -- limited, the State should focus periodic attention on marketing and mechanisms to assure recoverable materials meet specifications. To these ends, the Council plans periodically to return to the issue of markets.

As an additional step toward establishing and maintaining markets, the Council has been discussing the scope of a possible database and management information system for the State to assist the public and private sectors to market recovered materials. These discussions are in progress.

3. *Office Waste Reduction.* The Council addressed the ideas of State offices using double-sided copying and lighter basis weight papers as means of waste reduction. The Council was informed that the Office of the Governor is considering and Executive Order to implement such procedures. The Council commends issuance of such an Order at the earliest possible time so that State offices can make the necessary transitions. Both double-sided copying and using the lightest basis weight papers possible should reduce costs, as well as waste, for Maryland. State leadership in implementing these changes should encourage the public and private sectors to make similar changes.

Future Activities

Many of the specific charges in the Executive Order forming the Council are on-going tasks. Interim reports will be issued at appropriate times.

Revisions in the Work Plan (Appendix III) for calendar year 1991 were begun in September 1990 during an all day meeting of the Council.[2] The 1991 Work Plan will be issued during the first quarter of the year.

Acknowledgement

The Council acknowledges, with thanks, the professional staff assistance from the Maryland Department of Environment.

[2]The Council's September 1990 meeting was expanded to a full day. Half of the day was spent on planning, both modifications to the Work Plan and identification of priority issues beyond those in the Executive Order. The Council was able to hold this meeting at the Department of Natural Resources Conference Center on Wye Island.

APPENDIX I

COUNCIL ROSTER
1990

State of Maryland

Governor's Advisory Council on Recycling

1990 Roster

Harvey Alter, Ph.D. - Chairman 10 Watchwater Way Rockville 20850-2742 Phone: (O) 202-463-5531	General Public 3 years from 11/1/89
Michael A. Gagliardo 4812 Holder Avenue Baltimore 21214 Phone: 333-2730	N.E. Maryland Waste Service 3 years from 11/1/89
Lawrence J. Hayward 8512 Valleyfield Road Lutherville 21093 Phone: 437-1111	Packaging Industry 3 years from 11/1/89
Paul Hollinger 55 Raisin Tree Circle Pikesville 21208 Phone: 247-5656	Packaging Industry remainder of 2 years from 11/1/89
George T. Hudnet 9620 Trepid Road Baltimore 21236 Phone: 684-3334	Solid Waste Industry 1 year from 11/1/89
James F. Katcef 3129 Catrina Lane Annapolis 21403 Phone: 224-2391	Food & Beverage Industry 2 years from 11/1/89
Lenny D. Minutillo, Jr. 18028 Bacon Road White Hall 21161 Phone: 327-6500	Food & Beverage Industry 1 year from 11/1/89
Dan K. Morhaim, M.D. 422 Garrison Forest Road Owings Mills 21117 Phone: 682-7046	General Public 3 years from 11/1/89

Appendix 1
Governor's Advisory Council on Recycling
Roster

The Hon. Regina J. McNeill Councilwoman Town of Berwyn Heights 6303 Pontiac Street Berwyn Heights 20740 Phone: 953-9660	Maryland Municipal League 2 years from 11/1/89
Ronald Nelson Director Hazardous and Solid Waste Management Administration 2500 Broening Highway Baltimore 21224 Phone: 631-3304	Dept. of the Environment 3 years from 11/1/89
Michael J. Pelczar, Jr. Ph.D. Avalon Farm P.O.Box 133 Chester 21619 Phone: 643-5142	Environmental Community 1 year from 11/1/89
George G. Perdikakis 4812 Holder Avenue Baltimore 21214 Phone: 974-7281	MD Environmental Service 3 years from 11/1/89
The Hon. Joan B. Pitkin Maryland House of Delegates 208 House Office Building Annapolis 21401 Phone: 841-3098	House of Delegates 1 year from 11/1/89
Thomas W. Redmond, Sr. 8224 Baltimore Annapolis Blvd. Pasadena 21122 Phone: 437-1111	Recycling Industry 2 years from 11/1/89
The Hon. John W. Schafer Harford County Council 910 Rock Spring Road Bel Air 21014 Phone: 838-4246	Maryland Association of Counties 2 years from 11/1/89

Appendix 1
Governor's Advisory Council on Recycling
Roster

Barry F. Scher
5417 Marlin Street
Rockville 20853
Phone: 341-4710

MD Food Dealers Association
2 years from 11/1/89

The Hon. Gerald W. Winegrad
Maryland State Senate
401 Senate Office Building
Annapolis 21401
Phone: 841-3578

Maryland State Senate
1 year from 11/1/89

APPENDIX II

Attendance of Council Members 1990

The attendance of the members is listed as the number of meetings attended/number of meetings they were elegible to attend during 1990.

Dr. Harvey Alter 11/12
Michael Gagliardo 12/12
Lawrence Hayward 7/12
Paul Hollinger 4/4
George Hudnet 7/12
James Katcef 12/12
Regina McNeil 8/12
Lenny Minutillo 6/12
Dan Morhain 9/12
Michael Pelczar 8/12
George Perdikakis 7/12
Joan Pitkin 5/12
Thomas Redmond 10/12
John W. Schafer 9/11
Barry Scher 8/12
Gerald Winegrad 7/12

APPENDIX III

WORK PLAN - 1990

April 2, 1990

PLAN OF WORK
1990

State of Maryland

Governor's Advisory Council on Recycling

1.0 Introduction

This plan presents the work schedule adopted by the Council to address the recycling questions assigned by Governor William Donald Schaefer and other points the Council wishes to include. The schedule is for 1990. An amended plan will be adopted for 1991 later this year.

There are three categories of questions or tasks the Council is undertaking: (1) the Governor's assignment; (2) some short term subjects that will demonstrate the State's leadership by reducing the amount of waste discarded by State executive and legislative branch offices and improve recycling; and (3) long term goals and strategies for increasing and improving recycling in Maryland. The Governor's assignment (contained in the Executive Order creating the Council) encompasses the pressing problems likely to be encountered during start-up of any recycling program.

Many of the tasks are inter-related so that the Council can not assign independent priorities to them. Some tasks cannot be addressed until the counties[1] submit their recycling plans to the Department of the Environment (The plans are due by July 1, 1990.)

This Work Plan discusses the tasks from the Governor and those added by the Council. The latter are classified as short-term and long-term. All are described below. A section of the Plan describes the time schedule the Council has adopted for 1990 for many of the tasks.

An important high priority task is omitted from the Work Plan discussion, at present. This task is to establish base-lines from which progress in recycling can be measured. There are no generally accepted models for computing waste composition, recycling potentials, nor the level of activity needed to meet the State's mandated recycling goals. There should be standardized baselines of quantity and composition of municipal solid waste (MSW) for urban, suburban and rural areas. Even if these are not exact, everyone should be counting from the same base. Better statistics are needed on just how much MSW is generated in the State, which is different from the total amount of solid waste going to disposal. The approach to this task will be planned (and may displace some other tasks on the schedule) after the counties submit their recycling plans. It is expected that some or all of the information needed will be included in the plans.

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1. References to counties in this plan include Baltimore City.

Another omission is the consideration of new recycling initiatives. The Council will consider these as part of all other assignments and when new initiatives are proposed by Council members or others.

2.0 Organization and Method of Operation of the Council

The Council will address the Governor's assignments concurrently with other tasks. To do this, small working groups or Task Forces will be organized for each task. When a Task Force finishes its report to the entire Council, the members will be available for other assignments.

The Council seeks input from all sectors across the State: public, private, citizens -- anyone who has something to contribute. The Council wishes to develop a broad consensus on what has to be done. Inquiries and discussions have begun to learn what the State, counties and the private sector are doing or plan to do to increase recycling in Maryland. Invitations will be issued by the Council, and through its representatives of the various public and private sectors, for recommendations and suggestions.

The public must be informed of progress. This will be coordinated through the Governor's office.

3.0 The Governor's Assignments

3.1 *Coordinate State Efforts to Facilitate Implementation of Recycling Goals at the State and County Levels:* This task must be considered by itself and in conjunction with all other assignments. The Council as adopted a continuing function to monitor recycling activities around the State. Staff has been asked to prepare periodic summaries of these activities, which will be made available widely. The Council's present consideration of tasks in paragraphs 4.1.1 and 4.1.2 are an initial effort to increase coordination among State offices and agencies, including the General Assembly.

3.2 *Identify & Evaluate Markets:* Most markets for recovered materials are strong; some are not likely to be satiated in the foreseeable future. The markets for office and computer papers, steel or aluminum cans, PET and HDPE plastics, and to an extent glass, are strong.[1] (The caveat for glass is because of the freight costs for the relatively low value product. Many parts of Maryland are close to glass plants.) Conventional wisdom is to worry because markets for old newsprint (ONP), tires, batteries, mixed papers and compost are weak. There is never likely to be a strong market for mixed papers for good technological reasons. Compost is a soil adjuvant, not a nutrient, and never has had high value anywhere in the world. Its selling price is low or negative, a situation unlikely to change. The limitations on the markets for discarded tires and batteries are different and will be addressed in part as part of two of the long-term tasks.

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1. A caution is needed here. The steel industry is assisting finding markets for steel cans but there is a surplus of scrap steel from other sources. Cans and some other grades of scrap steel compete for uses.

All over the country, people involved in recycling try to "identify" markets but do not often extend their vision to issues of marketing and specifications. Other factors that must be addressed in this context are the pricing mechanisms (guarding against upside and downside fluctuations), stability, interstate/intrastate competition and export opportunities.

It is important to recommend to the counties what is in the literature on markets and marketing. The recently completed State "market study" will be the starting point for discussions. The Council also will address the possibility of a centralized marketing function for recovered products.

The counties will likely be bidding against each other for available markets. There would be a great duplication of effort as each county attempts to establish a marketing function. The learning curve will be steep, expensive and time consuming. What merit would there be for the State to create a centralized function and sell all recovered materials as if from one source? Rather than have the State establish and maintain this new function, and recognizing that marketing and selling of products is not something the public sector does well, what are the merits of having the private sector market the recovered materials? This could be by public bid by recognized brokers and dealers. An incentive could be built-in by paying a percentage commission on sales rather than a fee. (At start-up, there could be a fixed-fee plus percentage to account for the fixed costs of start-up.) A private, established broker could conceivably better distribute the products from county programs in national and world markets, blending with traditional materials as necessary.

3.3 *Need to Expand/Construct Recycling Centers:* What constitutes a recycling center -- as opposed to a Materials Recovery Facility (MRF)? Which are needed, where? Some processing of separately collected materials is necessary in order to meet buyers' specifications. The State must be covered by a collection network feeding to aggregation centers (collection and transfer points) and there to MRFs for processing and to benefit from economies of scale. The collection quantities and locations are related to the nodes of waste generation and must accommodate rural and urban communities. This description lends it self to an operations research analysis for siting aggregation centers and MRFs and for achieving efficient regionalization. Some study is needed but this cannot be determined until the counties submit their recycling plans.

The operations research approach must include estimates of future quantities and grades of recyclable materials. For example, projections today show that the amounts of steel and glass packaging in MSW are dropping sharply. (So is paper packaging, which is not recyclable.) Plastics packaging is growing, but at a lower rate than other materials are dropping. How much will there be to recycle? Which housing densities will permit economical collection? Siting of MRFs and aggregation centers will be opposed (NIMBY). What can the State do to lessen NIMBY?

Are drop-off centers a way of expanding recycling? Some research shows that such centers have the lowest rate of participation. However, drop-off centers may be the only practical collection method in rural counties because they are compatible with current waste collection practices. Again, the counties' recycling plans must be submitted before this subject can be addressed.

3.4 *Development of Rules & Regulations for Recycling:* Two sets of rules will be needed: one for participants (starting with householders and small businesses) and another for processors and handlers of recycled materials. For the former, should there be a penalty for nonparticipation?

Should there be a penalty for the wrong materials? Should the State specify the types of containers? Who should determine the materials to be separated?

For the processors and handlers, will a State permit be required? Are there any new public health issues? Should there be any restrictions on where the materials to be recycled come from? If a MRF or aggregation center is operated by a county, should the permitting be any different than for the private sector? Are new laws needed regarding scavenging? Are regulations needed to protect public health?

What rules are needed to administer the State recycling law? How do we assure that all counties are keeping track of recycling percentages the same way? How do we ascertain that their recycling plans are comparable?

Will rules or regulations be required to specify which materials are to be recycled? At present, counties are planning to meet the mandated goals, which are based on weight. As a result, there is a natural tendency to ignore light weight materials, such as plastic containers. These containers make up only about two percent of MSW but there is a market for them. Will other materials be ignored if, for example, the mandated targets can be reached by recycling say yard waste?

3.5 *Programs to Maximize Participation:* If household source separation is required, should it be enforced? Is this a proper role for the police? Should enforcement be different for homeowners, businesses or government offices? Should counties be required to include specified materials in their plans, similar to some other states?

Can public information programs, which are essential in any case, be substituted for enforcement? Who should conduct them? (If government does, they are often ineffective, underfunded, and short-lived as legislatures scrutinize budgets.) What are appropriate measures of success: numbers of participants or quantities collected? Which methods of separation/collection and which containers receive the highest acceptance? What is the relationship between participation and demographics? (There are some data indicating higher participation correlates with higher education/income.) How do we achieve participation in high density dwelling units -- especially given health and fire regulations? What will be the participation at drop-off centers? How should recycling be conducted in low density rural areas? In areas without organized collection, should the residents be *de facto* excused from the recycling programs?

3.6 *Ways to Maximize State Procurement of Recycled Materials:* Given the present state of markets, should the State do anything? If they did, which products would be affected beyond certain grades of paper? How do you specify and differentiate between the use of secondary materials and secondary materials recovered from wastes destined for disposal. (Most products contain some secondary material.) Should the State adopt the Federal RCRA regulations here? Should they offer a higher price (say +10%)? What would it buy? For tires, what is involved in specifying road pavement with rubber-asphalt? How much more would it cost? What assurances can there be that any purchased product would assist Maryland markets?

It is unlikely that State procurement could generate much of a market for recycled materials (with the possible exception of paper, presuming specifications are clear to include post-consumer

stocks). However, should the State take actions with symbolic value to lead the way? If so, which actions would make sense in their own right and not just add cost?

3.7 *Evaluate Programs for Waste Reduction:* Any discussion of waste reduction must begin with recognition that the amount of waste generated *per capita* is not increasing; the fraction of packaging residues in MSW has gone down since 1972; metal and glass packaging weights have decreased over the years; packaging reduces the amount of food residues in MSW; all forms of packaging are decreasing except plastics, which is increasing slightly and has the greatest effect in reducing the amount of MSW.

What can the State do in its own operations to reduce waste? The Council started in February to address using double-sided copying and lighter weight bond papers in State offices. How much waste reduction would this accomplish?

Can the State take any other waste reduction steps without being contrary to interstate commerce? Should the State educate people so that they can make waste reducing decisions? (For example, a large waste reducing consumer decision would be to use plastic grocery bags instead of paper, other considerations of trade-offs aside.)

3.8 *Economic Feasibility of Recycling Programs:* The first step is to properly define "avoided cost," the popular budget "item" for financing recycling. Too often, it has been taken to mean the avoided disposal (or tip) fee. Rather, it is the avoided marginal cost of disposal, often much less than the tip fee. Economic feasibility will be better understood when jurisdictions are on a true user fee basis.

The literature is not clear as to the costs of separate collection of recyclable materials. Some time-motion studies have been done but they can be criticized. More and better data are needed. Everyone could use an economic decision model. Should the State develop one?

3.9 *Cost/Benefit of Packaging Replacements:* The Council must start with consideration of paragraph 3.6. Add to that the finding that foamed polystyrene packaging (the common target of such proposals) occupies 0.2% or so of landfills and the subject seems absurd. Similar proposals around the country cannot be supported by the data. There are trade-offs and anyone dictating package design is likely to slow the technological advances that reduce waste.

Given all of this, do we do nothing or should there be a information program such as mentioned in paragraph 3.6? How do we examine the trade-offs of waste and package replacements, let alone the health and environment factors?

4.0 Additional Points the Council Wishes to Consider

4.1 *Short-Term Tasks*

4.1.1 *Recycling in State Offices:* Can we increase office recycling of newspapers and office papers? How much paper will be recycled this way? What investments will have to be made? How can glass, aluminum, and possibly other materials be included? How can this recycling be

coordinated with the counties so that the State and counties do not work at cross purposes? How will federal facilities be included?

4.1.2 *Waste Reduction in State Offices:* An often overlooked waste management technique is to reduce the amount of paper being deposited in office waste baskets. Also overlooked is that since 1960, books and magazines and office wastes have grown as a portion of the waste stream. However, office waste is less than 3% of MSW. (By contrast, newspapers have been about 6.8% on average since 1960.) The amount of office waste can be reduced by using double-sided copying and lighter weight bond papers. How much waste reduction would this accomplish? How much would it cost to phase in double-sided office copiers?

4.2 *Long-Term Tasks*

4.2.1 *Markets for ONP and Tires:* The markets for most materials likely to be recovered from MSW are strong except for a few materials. Two outstanding exceptions are old newsprint (ONP) and discarded tires. The markets for these two might be integrated. Many firms are now investigating new de-inking mills for ONP. Should the State do what it can (*e.g.*, through its economic development program) to attract one of these mills? Further, these mills are large users of steam and power that could be generated by captive power plants burning coal and tires. Discussions have already started between the State and possible owner-operators of ONP de-inking mills. Predictions are that in about three to four years, new mills will be on-line and the market for ONP will be strong. If so, does the State have to do anything?

4.2.2 *Lead-Acid Storage Batteries:* The third material for which markets are poor are old lead-acid storage batteries. There is no shortage of demand for the lead, nor for the polypropylene cases. The barrier appears to be siting, given the future Superfund liability of an operator. The situation could get worse with passage of new Federal legislation. A bill recently introduced in Congress would require sellers of batteries, at all levels, to take back old ones. Something will have to be done with the batteries. What can the State do to attract a battery recycler? Perhaps just leasing the land for a plant and holding the lease holder harmless for future Superfund liability would be enough. (These plants are subject to RCRA Subtitle C corrective action so it is unlikely there would be any environmental insult.) Hold harmless may not be important environmentally; it may be essential to attract a plant. What is involved? Batteries from Maryland would have to be first in the queue for the recycling plant.

4.2.3 *Advancing MRF Technology:* Recycling programs will require the building and operation of materials recycling facilities (MRFs) to prepare separated products for markets. The products as-collected do not meet buyers' specifications. Current MRFs are labor intensive, with little mechanical processing. OSHA and related state agencies apparently have not taken a close look at these operations, which too often are built on shoe strings and present risks to workers. Picking garbage is not pleasant work. The future prospects for hiring laborers for this type of work are poor given current demographics of the work force, short of large future immigration. What can the State do to encourage new technology and capital--, rather than labor--intensive separations? Is a model regional MRF a way? Should the State pay for the design of a modern MRF and make this available to the counties? Should this be extended to building the first one, and thus demonstrating the technology in the State? Can this be accomplished by a full service operator (which is the way

modern waste-to-energy plants have been built and successfully operated). Should the State encourage a regional MRF to lead the way? If so, what would be the best way of doing this, short of funding the entire design and construction, even operation?

4.2.4 *Overlooked Wastes:* There are some large quantity, homogeneous wastes that are often overlooked when discussing recycling programs: old license plates, last year's telephone books, and the asphalt paving or roofing from demolition. Old license plates probably do not amount to much waste disposed, but the aluminum is valuable. Should the Motor Vehicle Administration require citizens to return voided plates? How can we organize to avoid old telephone directories from being sent to landfills? Judging from current I-270 construction, there is some asphalt recycling in Maryland. What of other road demolition wastes? What happens to old roofing wastes? Which other wastes are being overlooked?

5.0 Ongoing Tasks

5.1 *Introduction:* Some tasks are considerations that must be included in discussion of all other tasks. In addition to paragraph 3.1, three others are described below.

5.2 *Informing the Public as to Progress:* The Council has an obligation to keep the public informed about what its deliberations, including open meetings and opportunities for public outreach. The Council reports to the Governor who will be consulted as how best to inform the public.

5.3 *Recommendations of New State Initiatives:* Paragraphs 4.2.1 and 4.2.2 are for new State initiatives. Throughout the Council's deliberations, it must be sensitive to other initiatives.

5.3 *Education:* The Council has to address what can be done within the education system to teach a waste management ethic. There are school curricula for K-12 and perhaps the State can encourage their use. There is little related course work in colleges and universities. Should the Maryland universities and colleges be encouraged to develop undergraduate and post-graduate courses in the field?

6.0 The Schedule for 1990

Two charts are appended. The first presents a schedule for addressing the eight of the tasks assigned by the Governor. (Task 3.1 pervades all other considerations, so is not listed separately on the chart.). The second is a schedule for addressing some of the points proposed by the Council. Note that tasks from each category will be addressed concurrently.

The Charts show three types of activities: discussion by the full Council, assignments for Council Task Forces, and Recommendations formulation. Not all tasks have the three types of activities during 1990. This is because either there is not enough time or because the tasks cannot be addressed until some other information is available, such as the county recycling plans.

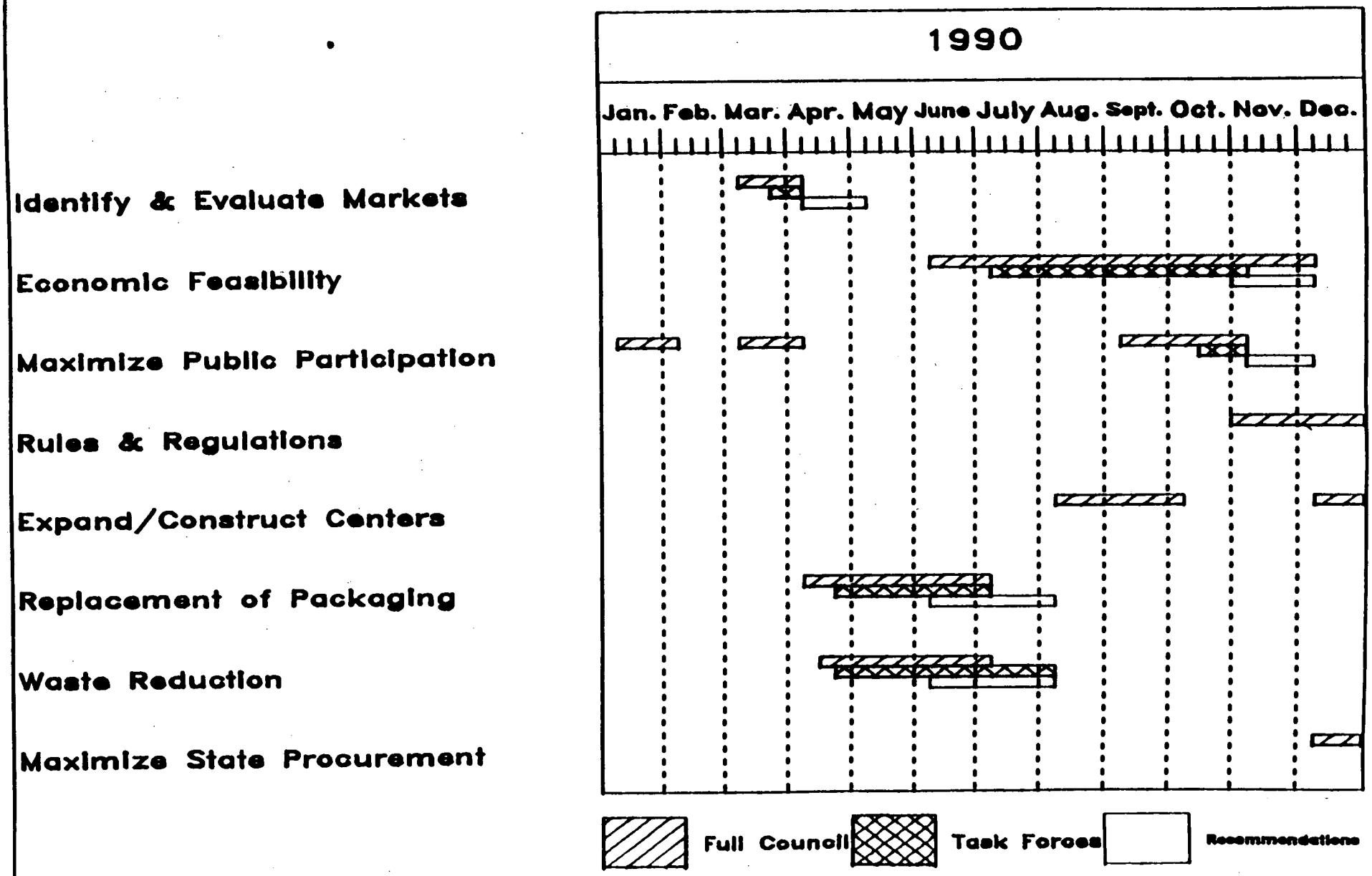
No schedules for beyond 1990 have been formulated. Probably, some of the tasks planned for 1990 will not be completed and will carry over. In all likelihood, the Council will want to address additional tasks in subsequent years. These schedules will have to be updated periodically.

Some aspects of the schedules need to be highlighted. Note that economic feasibility cannot be fully addressed until the county plans have been submitted. Maximizing State procurement is scheduled for the end of 1990 because this subject can wait compared to others that will more directly influence implementation of the county plans. Consideration of recycling and waste reduction in State offices has begun, so these subjects are scheduled early. Discussion of advancing MRF technology is left until the end of 1990; much has to be learned about the subject before meaningful discussions can be held.

The schedules are ambitious and subject to change.

Governor's Advisory Council on Recycling

Schedule of Assigned Tasks



G900219b, Feb. 1990

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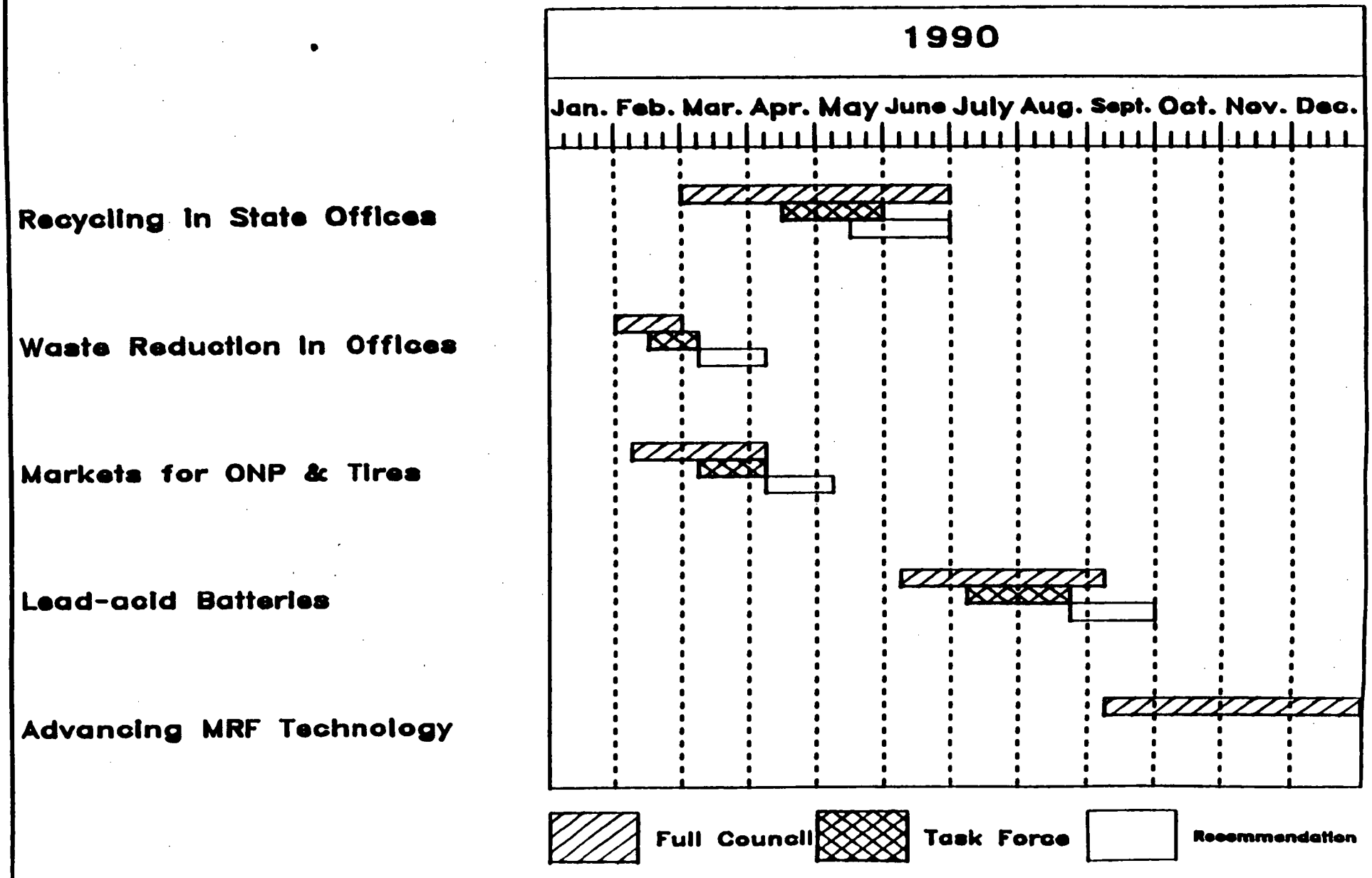
Schedule of Short & Long Term Tasks



G900220a, Feb. 1990

APPENDIX IV

PAMPHLETS ON:

Guide to Buying Recycled Products
Guide to Waste Audits for Waste Reduction
- Guide to Office Recycling

State of Maryland
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GUIDE TO BUYING RECYCLED PRODUCTS

The Maryland Recycling Law establishes goals of 20% recycling in the seven largest counties and 15% in the smaller counties by 1994. While the goals of the law are laudable, they will not succeed unless markets for recovered materials can absorb the new supply.

The term "recycled product" is used here to mean a product made in all -- or part -- from secondary material that has been recovered from manufacturing or post-consumer waste. Alternatively, "recycled product" may mean a product that has been rebuilt, such as a rebuilt engine.

Recycling involves three elements: collection, manufacturing and use. (These are represented by the three arrows in the traditional recycling symbol.) The three elements must be in balance to fully realize the potential of a recycling program as a means of waste management, energy conservation, and resource conservation. Merely collecting "recyclables" is not recycling. Recycling does not occur until the recovered materials are returned to the economic mainstream.

According to the National Institute of Governmental Purchasing, government purchases represent from 20 to 21% of GNP (7-8% federal, 12-13% state and local). In addition, governments have an important role in influencing private purchases, both by example and by their standards and specifications.

Present Programs

At the federal level, Section 6002 of the Resource Conservation and Recovery Act (RCRA), requires purchasing programs for recycled products by federal agencies and by state and local agencies and contractors using appropriated federal funds. The U.S. Environmental Protection Agency (EPA) has published five guidelines for recycled paper and paper products, rerefined oil, retreaded tires, building insulation products, and cement and concrete made with fly ash. The guidelines describe specifications, minimum content standards, and recommendations on establishing a procurement program. EPA is also examining the feasibility of new guidelines for building and construction materials, rubber products, asphalt rubber and yard waste compost.

There are some 38 states and 16 local governments that have ordinances or regulations favoring the purchase of products containing recycled materials. In Maryland, current law

requires 40% of the state's paper purchases to be recycled paper (defined as paper containing 80% post-consumer waste). The law also requires State agencies to develop a plan to increase their purchases of recycled products. A new law passed by the General Assembly in 1990 requires a five percent price preference for such products.

Elements of a Recycled Product Purchasing Plan

Governments, businesses and non-profit organizations should establish programs to purchase products containing recycled materials. The National Recycling Coalition, a national public-private non-profit organization committed to increasing recycling, recommends several key elements of a recycled product purchasing plan. These are summarized below.

1. Commitment to Buy. Organizations must establish a policy to buy recycled products. This commitment will provide leadership to users, and convince suppliers that a consistent, long term demand exists.

2. Review Purchasing Specifications. Specifications should be reviewed to eliminate prohibitions or limitations of recycled materials. Subtle obstacles, such as brightness levels for paper, must be identified and reviewed.

3. Common Definitions and Percentages. Organizations should use existing minimum content standards and definitions. Manufacturers cannot supply different products to the 50 states, more than 83,000 local governments, or millions of private organizations. Standardized specifications enable manufacturers to offer commodity items at a lower cost than specialty items.

4. Variety of Products. Even though paper makes up the largest fraction of the waste stream, buying recycled paper alone will not solve the solid waste problem. Organizations should consider buying a variety of recycled products, including paper, oil, plastics, auto parts, compost, aggregate, rubber, and so forth. Organizations should also consider recycling services such as tire retreading and oil recycling.

5. Testing Products. Organizations should test recycled products to determine how they work on certain equipment and for particular end uses.

6. Phased-In Approach. It is wise to phase-in use of recycled products so that users can adjust to the program and manufacturers can make capital investments to produce products containing recovered materials.

7. Price Incentives. Recycled products initially may be more expensive than corresponding products made entirely from virgin materials. (Much of this has to do with the present short supply of certain secondary materials meeting necessary specifications.) The organizational commitment to use recycled products may be fulfilled by offering a small price preference to suppliers, by considering life-cycle costing, or establishing set-asides. Many public sector organizations have adopted price preferences as an investment in market development.

8. Cooperation Between Solid Waste and Purchasing Officials. Both solid waste and purchasing officials have expertise and experience that should be used to develop an effective program for buying recycled products.

9. Cooperation Among Manufacturers, Vendors and Users. Organizations must actively solicit bids from manufacturers and vendors of recycled products and widely publicize the bids. Manufacturers and vendors must be encouraged to provide a wide range of recycled products and let users know about them.

10. Cooperative Purchasing. Organizations should consider joining together to buy recycled products. Cooperative purchases expand the volume purchased, reduce unit costs, help ensure availability, and establish common specifications.

11. Waste Reduction and Recyclability. In addition to buying recycled products, organizations should buy recyclable products.

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Sources of Assistance

The local recycling coordinator, solid waste manager or purchasing department can provide technical assistance. Further assistance is available from:

Northeast Maryland Waste Disposal Authority 25 Charles Street, Suite 2105 Baltimore, Maryland 21201-3330 301-333-2730	technical assistance information on suppliers
Maryland Environmental Service 2020 Industrial Drive Annapolis, Maryland 21401 301-974-7254 800-492-9188	technical assistance publishes the *Maryland Recycling Directory*
Maryland Department of the Environment Office of Waste Minimization and Recycling 2500 Broening Highway Baltimore, Maryland 21224 301-631-3315	technical assistance
U.S. Environmental Protection Agency Recycled Guideline Hotline c/o EH Pechan & Associates 5537 Hempstead Way Springfield, Virginia 22151 703-941-4452	information on federal procurement guidelines c/o and recycled product suppliers

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GUIDE TO WASTE AUDITS FOR WASTE REDUCTION AND RECYCLING

Waste generated in the home is only about one-half of the municipal solid waste stream. Businesses and public and private institutions (such as schools and government facilities) produce the other half. In order for Counties to meet the State's recycling goals, businesses must participate in recycling and waste reduction programs.

Waste reduction means avoiding the generation of waste. In addition to recycling, it includes several other actions.

- using supplies and equipment more efficiently
- replacing disposable materials with reusable and recyclable materials
- buying products and equipment that are durable or easily repairable or recyclable

Waste reduction is the most environmentally benign form of waste management. Unlike recycling or virgin production, there is no need to process or transport materials and the amount of energy and raw material used is reduced. The less waste produced, and requiring disposal, the more money is saved by governments and businesses.

Waste Audit

A waste audit will identify areas or activities where waste can be reduced. The audit identifies raw materials being used, waste composition, recyclable materials, and activities and procedures that can be changed so as to produce less waste.

A successful waste audit should include the following elements:

- naming a program coordinator to conduct the waste audit, get employees involved, track the progress of the program and solve problems
- developing waste reduction goals
- conducting a visual survey of materials in the trash
- identifying types and quantities of waste generated
- reviewing purchasing practices
- identifying waste reduction opportunities

Once the audit is complete, the waste reduction program must be implemented. This includes:

- establishing a waste reduction and recycling policy (See, for example, the suggested policy following this Guide.)
- publicizing the program
- training staff
- implementing the recommendations and publicizing the results
- evaluating and revising the program

A waste audit should be conducted at least once a year to ensure that the program is complete and up-to-date. The remainder of this text will focus on techniques to reduce waste generation.

Reducing Paper Waste

According to an EPA report, paper and paperboard represent the largest percentage of material discarded into the municipal waste stream, almost 40%. Office waste is about 10% of this and most of it is recyclable. How can paper waste be reduced? Listed below are some of the techniques.

- Use dual-sided copying whenever possible. Dual-sided copying can save up to 50% of paper purchases, reduce the need for new filing cabinets and file space, reduce mailing costs, and permit smaller mailing envelopes to be used.

- Use lighter weight papers whenever possible. Such papers are generally less expensive.

- Establish centralized filing systems to reduce the number of copies of documents.

- Use obsolete forms for drafts and memo pads. If no sensitive material is involved, the paper can be donated as drawing paper to child-care or similar facilities.

- Reuse interoffice envelopes, file folders, and corrugated boxes.

- Eliminate needless forms.

- Use central bulletin boards, the telephone, and staff meetings instead of sending memos.

Many organizations measure success by the length of their mailing list. Organizations need to communicate, but there are ways to reduce waste in doing so.

- Reduce mailing and distribution lists and reevaluate quantities needed for reports and publications.

- Share documents with other staff or agencies.

- Remove your name from mailing lists for materials you no longer need or share with others.

- Use electronic or computer mail.

Government and businesses can buy paper products that can be recycled in office wastepaper recycling systems. Switching to white ledger and white legal pads will increase the value of waste paper. You can replace plastic-window envelopes, which are rarely recyclable, with open-window envelopes. Mailing labels and other sticky products should be water soluble to permit recycling. Reports should be printed on non-glossy paper to allow excess material and

trim to be recycled. These techniques can improve the value of the wastepaper by eliminating contaminants.

The purchasing division should work closely with the records-management division on wastepaper recycling. The records-management division disposes of material after it remains in storage for a required number of years. They work with local recyclers and know which paper can be recycled profitably and which contaminants (glues, carbon paper, etc.) reduce the value of waste paper. Purchasing officials should use the information to assure that future discards are more recyclable.

Inventory Control

Public and private agencies should establish a computerized inventory control for the products they buy to avoid wasteful duplication. Agencies can share materials and buy in bulk quantities to reduce unit costs and consume less packaging.

Purchasing officials should cooperate in the inventory system and with their salvage bureaus. Salvage officials know which products can be reused or recycled. They can inform agencies of available products and suggest products that are easier to recycle. The salvage bureau can sell or donate usable equipment to other agencies, governments, citizens (through auctions), rebuilders, recyclers, and nonprofit organizations.

Influencing Manufacturers

Agencies can use their purchasing power and specifications to convince suppliers to reduce waste volume and toxicity. A specification for packaging can specify the use of recyclable paperboard or prohibit the use of inks that contain toxic metals (*e.g.*, lead or cadmium). They can require that manufacturers of automobile or truck batteries accept used units for recycling before the government will buy new ones.

Remanufacturing

More than five hundred U.S. firms are involved in remanufacturing, an industrial activity that collects discarded or nonfunctioning durable products, disassembles and refurbishes reusable parts, replaces other parts, and reassembles the parts into usable products. Examples of products that can be remanufactured include vehicles, vehicle parts, transformers, vending machines, tires (retreading), respliced computer paper, compressors, telephones, and many others. Organizations can buy remanufactured products and so reduce wastes.

Other Waste Reduction Techniques

Governments and businesses have other methods of reducing waste:

- Use life-cycle costing formulas that include product life and disposal costs to encourage recyclable, reusable, and durable products.
- Buy reusable pallets.
- Buying cloth towels or hand warmers instead of paper towels.
- Buy reusable wiping cloths.
- Use backhauling, where the vehicle making a shipment of finished products takes recyclable materials back to the manufacturer instead of returning empty.

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Suggested Organizational Policy

WASTE REDUCTION AND RECYCLING

In order to promote conservation, management is establishing this policy regarding materials reuse, recycling and waste reduction in all operations. To implement this policy, our organization will, to the extent practicable, undertake the following actions.

1. Purchase durable products, rather than disposable products.

2. Use two-sided copies.

3. Use recycled paper meeting, at a minimum, federal EPA guidelines, for all stationery, newsletters, copy paper, pads, business cards, and computer paper. A message to that effect will be stated on the paper when possible.

4. Use no inks containing toxic components for our publications.

5. Purchase and use recyclable paper for internal use and avoid colored or other papers that can not be recycled.

6. Use the back side of used paper or obsolete forms for scratch pads and first drafts.

7. Minimize the use of specified glues on products.

8. Use single copies with routing slips within the office whenever possible, rather than indiscriminate use of copies of memos.

9. Recycle paper, metal and glass.

10. Include a statement in all solicitations for bids for goods and services that this organization prefers doing business with companies that adhere to these principles.

11. Urge all employees, consultants and vendors to implement the above practices and follow the principles of waste reduction and materials reuse and recycling.

Your management will report annually on the success of everyone's efforts in reducing waste.

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GUIDE TO OFFICE RECYCLING

According to studies prepared for the United States Environmental Protection Agency, paper makes up nearly 40% of the municipal solid waste stream (after recycling). In a typical office, about 75% of the waste is recyclable paper (such as white and colored office paper, computer print-out, newsprint and corrugated), which can be recycled into new products. Office papers constitute about 10% of the total paper in the waste stream and have value as a recycled product.

The American Paper Institute has recommended a 40% recycling rate by 1995. An important part of achieving this goal will be collecting clean, source separated paper. Therefore, it is critical that public and private agencies establish office recycling programs.

While this Guide is specific to wastepaper (as the largest component of office generated solid waste), the same principles apply to recycling other office wastes such as metal and glass containers and cardboard.

Office recycling provides several benefits.

- generates revenue from the sale of recyclable materials
- reduces the amount of waste for disposal
- conserves energy
- provides raw materials for new products
- can reduce disposal costs
- helps Maryland Counties reach their recycling goals

Wastepaper Programs

Office managers should follow these steps to establish an office wastepaper recycling program:

1. *Discuss the program with potential materials buyers.* Look in the phone book under wastepaper dealers or contact the resources listed at the end of this Guide. It is important to establish a contract with reputable secondary materials users, dealers or brokers.

2. *Obtain the support of upper level management.* Once you know that a market exists for the paper, ensure that the program has the support of the chief executive and other key policy makers of your organization. This will help gain maximum participation by all concerned.

3. *Determine the number of people who will participate and the types and amounts of paper that will be generated.* A good rule of thumb is that each employee in an office generates approximately one-third to one-half pound of paper per day. The selection of paper to be recycled will depend on local market conditions and the specifications in your sales contract, both of which are determined (in part) by the types of paper being used in your office.

It is critical that the highest possible grades of paper are collected. It may not be advantageous to collect mixed paper for recycling. While doing so has the advantage of removing the largest volume from the waste stream, mixed paper has a much lower value than separated paper, and will not help the long-term goal of providing wastepaper needed by mills to make high quality printing, writing, tissue and towel products.

Start programs after a demonstration period so as to identify and correct potential problems before involving all employees in the program. A new large, ambitious program that doesn't work will diminish enthusiasm and participation.

4. *Determine how employees will separate their recyclable paper from other wastes.* The most common methods are the desk-top collection container, a second trash can, and central collection areas. Separation is important to avoid contamination, which reduces the value of the paper. Each collection receptacle should include a recycling logo or other clear identifier, and should list acceptable and unacceptable items for recycling.

5. *Decide how paper will be collected and stored.* Most systems use central boxes where employees place separated paper. The employees place the paper in the containers when leaving the building for lunch, meetings or at the end of the day. The boxes are then

collected by janitorial or other personnel and placed in a central area for shipment to a paper dealer. The boxes should be clearly identified as recycling containers to avoid contamination.

6. *Establish the cost of the program.* Determine whether you or the wastepaper dealer will pay for such items as the desk-top units or other collection devices, the cost of boxes and pallets, and the cost of training. Determine the approximate value of the paper and estimated savings on disposal costs, including transportation (if any) to estimate the net cost or savings from the program.

7. *Negotiate a firm contract with a wastepaper dealer.* The contract should include which costs are borne by the dealer and which are your responsibility, grades to be collected, the method of pricing the paper, how the paper will be weighed, how often it will be collected, the allowable level of contaminants and outthrows, and the method of payment. Prices for wastepaper fluctuate due to changes in market conditions. These price fluctuations must be considered in developing the contract and net costs. Contracts can protect both buyers and sellers against severe fluctuations by establishing a floor price when the market is down, and a discount when the market is up.

8. *Coordinate your collection program with your purchases.* Buy only those products that can be recycled. Avoid items that are excluded by your buyer's specifications. These may include yellow legal pads, glossy papers, window envelopes, sticky labels and similar contaminants.

9. *Establish a coordinator for the program.* The coordinator will work with the wastepaper buyer(s) and employees to ensure smooth program implementation. Depending on the size of the program, it may be useful to have area monitors to assist the program coordinator in keeping participation rates up and contamination levels down.

10. *Make sure that all employees are trained.* The program will succeed only if every employee, from the chief executive to the lowest paid employee, understands the importance of recycling and is motivated to participate. A well publicized kickoff meeting, with a 15-20 minute training session (including program need, goals, collection methods, and acceptable and unacceptable items) is critical. Training must continue even after the program begins (with frequent reminders to employees). New employees should be trained as part of regular orientation programs.

11. *Publicize the success of the program.* This will encourage increased participation and enthusiasm and provide reliable information to convince other organizations to establish similar efforts.

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SOURCES OF ADDITIONAL INFORMATION AND TECHNICAL ASSISTANCE

Source	Assistance
Local Recycling Coordinator	Technical Assistance
Local Solid Waste Department	Technical Assistance
Local Purchasing Department	Technical Assistance
Northeast Maryland Waste Disposal Authority 25 South Charles Street Suite 2105 Baltimore, Maryland 21201-3330 (301) 333-2730	Technical Assistance
Maryland Environmental Service 2020 Industrial Drive Annapolis, Maryland 21401 (301) 974-7254 (800) 492-9188	Maryland Recycling Directory (markets information) Technical Assistance
Maryland Department of the Environment Office of Waste Minimization and Recycling 2500 Broening Highway Baltimore, Maryland 21224 (301) 631-3315	Technical Assistance Market Survey

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U.S. EPA Solid Waste Information 401 M Street, S.W. Washington, D.C. 20460 (800) 424-9346	Technical Assistance
National Recycling Coalition 1101 30th Street, N.W. Suite 305 Washington, D.C. 20007 (202) 625-6406	Peer Match Program (technical assistance, up to 50% of travel cost for advisor)
Institute of Scrap Recycling Industries 1627 K Street, N.W. Washington, D.C. 20006 (202) 466-4050	PS-90-Specifications for various wastepaper grades, Information on paper dealers ($10)
Mill Trade Journal South 105 Fairview Avenue Paramus, New Jersey 07652 (201) 368-1225	Wastepaper Prices
Fiber Market News 4012 Bridge Avenue Cleveland, Ohio 44113 (216) 961-4130	Wastepaper Prices